

REMARKS

Specification

The specification is amended to correct a clerical error that occurred without deceptive intent and appears in paragraph [0030]. As explained in paragraph [0010], the colorant 2 refers to the ordered array 4 which reflects light in the visible spectrum while a radiation diffractive material (i.e., the ordered array 4) reflects material of any wavelength of electromagnetic radiation. Hence, the last sentence of paragraph [0030] should state that the ordered array 4 is useful to reflect electromagnetic radiation in other than the visible range, not that the colorant 2 may reflect light outside the visible range. The amendment to paragraph [0030] corrects that error. No new matter has been added.

Prior Art

Claims 1, 2, 4-27 and 29-74 stand rejected under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 6,337,131 to Rupaner et al. Applicants respectfully traverse this rejection.

The Rupaner patent fails to teach or suggest the method of the present invention or compositions that are produced according to that method. Claims 54-75 are directed to a method of fixing an array of particles in a matrix by which a matrix is coated over an ordered array of particles and the array is fixed in the matrix. New claim 75 includes additional limitations originally present in claim 54. The independent composition claims (1 and 26) are amended to require that the compositions are produced by the method as in claim 54.

The colorant and the radiation defraction material of the present invention are produced by dispersing similarly charged particles in a carrier. This dispersion causes the particles to form into an ordered periodic array. The ordered periodic array is then coated with a matrix and the array of particles is fixed within the matrix. The matrix may be a cross-linked polymer and the fixing step occurs by curing the polymer.

In contrast, the Rupaner patent is directed to particles composed of core/shell structures which are heated to produce a film. The particles include a core material and a shell of a matrix material. An array of the particles is produced according to the Rupaner process by orienting the core/shell particles into a regular

structure. The shell material is filmed to flow around the cores and fix the cores in the regular structure. This is distinct from the present invention in which particles are arranged in an ordered array and a matrix material is coated onto the array, thereby fixing the array of particles within the matrix. No core/shell particles are used in the present invention.

Not only is the method of producing an array of particles within a matrix different between the present invention and the Rupaner patent, but the resulting structures are also distinct. Prior to filming of the shell material of the Rupaner particles, the cores of each adjacent particle are spaced apart from each other. The shells surrounding each of the cores prevent the cores from touching each other. Upon filming, the cores remain in position and the shell material fills in between each of the cores. As such, the particles are necessarily spaced apart from each other in the array upon filming of the shell material to produce a matrix surrounding the spaced apart cores. In contrast, in the present invention, the particles must touch each other to produce an ordered array prior to coating of the array with the matrix. See, for example, an embodiment of the invention shown in Figs. 1-3 that indicates the structure of the particles. Accordingly, the structures of the colorant and the radiation defractive material requiring the process steps in amended claims 1 and 26 are necessarily distinct from the film of material produced according to the Rupaner patent.

Nowhere in the Rupaner patent is there any teaching or suggestion to produce a colorant or radiation defractive material according to the process of the present invention. Therefore, claims 1, 2, 4-27 and 29-75 are believed to define thereover.

Claims 4 and 29 are amended to properly depend from respective independent claims 1 and 26. Claim 54 is amended to clarify the inventive features of the present invention, namely that the method of the present invention requires producing a dispersion of similarly charged particles in a carrier as an ordered array of the particles, coating the array of particles with a matrix and fixing the particles within the matrix. Additional limitations of original claim 54 now appear in claim 75. Claim 60 is amended to depend from claim 75, from which it has antecedent basis.

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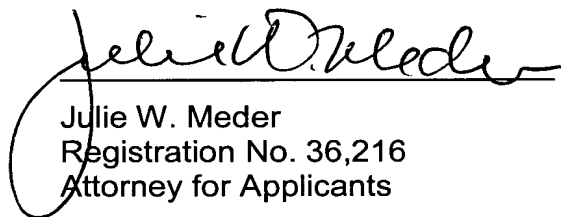
Claims 65 and 70 are amended for consistency with claim 54. No new matter has been added.

Allowance of claims 1, 2, 4-27 and 29-75 is respectfully requested.

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Respectfully submitted,



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